

What is claimed is:

1. An anastomotic system for positioning a bypass graft comprising:
a tissue dilator having at a distal end a dilating tip;
a tissue puncturing tool supported within the dilator and adapted to puncture a tissue wall to form an orifice enlargeable by the dilating tip;
an elongate and flexible sheath defining a lumen and having a proximal end and a distal end, said sheath moveable along the dilator; and
a plunger slidably disposed within the sheath lumen and configured to advance at least a portion of a tubular bypass graft through the sheath distal end;
wherein the sheath and plunger are each removable from around the graft.
2. The system of claim 1 additionally comprising a fitting affixed to the graft.
3. The system of claim 2 wherein the fitting comprises a tubular portion with a proximal end and a distal end, and wherein at least one self-expanding petal is disposed on the tubular portion distal end and is adapted to compress into a low profile for insertion through a sheath and self-expand towards at least one resting geometry upon advancing beyond the sheath distal end.
4. The system of claim 1 wherein the sheath is splittable longitudinally along at least one side of the sheath.
5. The system of claim 1 wherein the plunger is splittable longitudinally along at least one side of the plunger.

6. The system of claim 1 additionally comprising a hub and hemostatic valve assembly disposed on a proximal portion of the sheath.
7. The system of claim 1 wherein the dilator has a tapered distal end.
8. The system of claim 1 wherein the tissue puncturing tool comprises a needle.
9. The system of claim 1 wherein the tissue puncturing tool comprises a needle and guidewire.
10. A system for positioning an anastomotic fitting in a vessel comprising:
 - an anastomotic fitting;
 - a tissue dilator having at a distal end a dilating tip;
 - a tissue puncturing tool supported within the dilator and adapted to puncture a tissue wall to form an orifice enlargeable by the dilating tip;
 - an elongate and flexible sheath having a lumen, a proximal end and a distal end, said sheath moveable along the dilator;
 - a plunger slidably disposed within the sheath lumen and configured to advance at least a portion of the fitting through the sheath distal end;
 - wherein the sheath and plunger are each removable from around the fitting.
11. The system of claim 10 additionally comprising a tubular bypass graft affixed to the fitting.
12. The system of claim 10 wherein the fitting comprises a tubular portion with a proximal end and a distal end, and wherein at least one self-expanding petal is disposed on the tubular portion distal end and is adapted to compress into a low

profile for insertion through a sheath and self-expand towards at least one resting geometry upon advancing beyond the sheath distal end.

13. The system of claim 10 wherein the sheath is splittable longitudinally disposed along at least one side of the sheath.

14. The system of claim 10 wherein the plunger is splittable longitudinally disposed along at least one side of the plunger.

15. The system of claim 10 additionally comprising a hub and hemostatic valve assembly disposed on a proximal portion of the sheath.

16. The system of claim 10 wherein the dilator has a tapered distal end.

17. The system of claim 10 wherein the tissue puncturing tool comprises a needle.

18. The system of claim 10 wherein the tissue puncturing tool comprises a needle and guidewire.